What is claimed is:

Sub. a1 1. A dual drive system for providing power to two subsystems, the dual drive system comprising:

a reversible drive power source, having a main shaft with a longitudinal main shaft axis, a first end, and a second end;

a first over-running clutch assembly having a first output shaft, a first output speed, and having a free-wheeling rotational direction, the first over-running clutch assembly being connected to and driven by the first end of the main shaft;

a second over-running clutch assembly having a second output shaft, a second output speed, and an opposite free-wheeling rotational direction, the second over-running clutch assembly being connected to and driven by the second end of the main shaft;

a first subsystem, connected to and driven by the first output shaft; and

a second subsystem, connected to and driven by the second output shaft.

2. The system of Claim 1, wherein the reversible drive power source is one of a dual-speed reversible electric motor, a multi-speed reversible electric motor, and a variable-speed reversible electric motor.

3. The system of Claim 1, wherein the reversible drive power source indirectly drives the main shaft.

4. The system of Claim 1, wherein the first over-running clutch assembly further comprises a gear system arranged to reduce or increase the first output speed.

5. The system of Claim 4, wherein the gear system comprises a harmonic drive gear set.

6. The system of Claim 1, wherein the second over-running clutch assembly further comprises a second gear system arranged to reduce or increase the second output speed.

7. The system of Claim 1, wherein the first subsystem is a hydraulic pump.

8. The system of Claim 1, wherein the second subsystem is an air compressor.

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9. The system of Claim 8, wherein the air compressor is an air cycle machine arranged for air-cooling.

10. The system of Claim 1, further comprising:

a second drive power source, having a drive shaft with a longitudinal drive axis, arranged so that the drive shaft of the second drive power source is connected to and drives the second subsystem.

11. The system of Claim 10, wherein the second drive power source is a single speed non-reversible electric motor.

12. The system of Claim 10, wherein the longitudinal drive axis of the drive shaft of the second drive power source is aligned co-linear with the longitudinal main shaft axis of the main shaft of the reversible drive power source.

13. A dual drive system for providing power to two subsystems, the dual drive system comprising:

a drive power source, having a main shaft with a longitudinal main shaft axis, a first end, and a second end;

a first clutch assembly having a first output shaft, and a first output speed, the first clutch assembly being connected to and driven by the first end of the main shaft;

a second clutch assembly having a second output shaft, and a second output speed, the second clutch assembly being connected to and driven by the second end of the main shaft;

a controller connected to and arranged to engage and disengage the first clutch assembly, and connected to and arranged to engage and disengage second clutch assembly;

a first subsystem, connected to and driven by the first output shaft; and;

a second subsystem, connected to and driven by the second output shaft.

14. The system of Claim 13, wherein the drive power source is one of a dual-speed electric motor, a multi-speed electric motor, and a variable-speed electric motor

15. The system of Claim 13, wherein the first clutch assembly further comprises a gear system arranged to reduce or increase the first output speed.

Sub. a1 16. The system of Claim 13, wherein the second clutch assembly further comprises a second gear system arranged to reduce or increase the second output speed.

17. The system of Claim 13, wherein the first subsystem is a hydraulic pump.

18. The system of Claim 13, wherein the second subsystem is an air compressor.

19. A dual drive system for providing power to two subsystems, the dual drive system comprising:

a drive power source, having a main shaft with a longitudinal main shaft axis, a first end, and a second end;

a hydraulic pump subsystem connected to and driven by the first end of the main shaft, the hydraulic pump subsystem including a hydraulic pump and a pump power reducing system for unloading the hydraulic pump;

an air compressor subsystem connected to and driven by the second end of the main shaft, the air compressor subsystem including an air compressor and an air compressor power reducing system for unloading the air compressor; and

a controller connected to the pump power reducing system and connected to the air compressor power reducing system.

20. The system of Claim 19, wherein the pump power reducing system includes a short circuit of the hydraulic pump.

21. The system of Claim 19, wherein the air compressor power reducing system includes an air bleed.

22. A dual drive system for providing power to two aircraft subsystems, the dual drive system comprising:

a reversible drive power source incorporated in an aircraft, having a main shaft with a longitudinal main shaft axis, a first end, and a second end;

a first over-running clutch assembly having a first output shaft, a first output speed, and having a free-wheeling rotational direction, the first over-running clutch assembly being connected to and driven by the first end of the main shaft;

a second over-running clutch assembly having a second output shaft, a second output speed, and an opposite free-wheeling rotational direction, the second

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over-running clutch assembly being connected to and driven by the second end of the main shaft;

a hydraulic pump, connected to and driven by the first output shaft; and

an air compressor connected to and driven by the second output shaft.

23. The system of Claim 22, wherein the reversible drive power source is one of a dual-speed reversible electric motor, a multi-speed reversible electric motor, and a variable-speed reversible electric motor.

24. The system of Claim 22, wherein the first over-running clutch assembly further comprises a gear system arranged to reduce or increase the first output speed.

25. The system of Claim 24, wherein the gear system comprises a harmonic drive gear set.

26. The system of Claim 22, wherein the second over-running clutch assembly further comprises a second gear system arranged to reduce or increase the second output speed.

27. The system of Claim 22, wherein the air compressor is an air cycle machine arranged for air-cooling.

28. The system of Claim 27, further comprising:

a second drive power source, having a drive shaft with a longitudinal drive axis, arranged so that the drive shaft of the second drive power source is connected to and drives the air compressor.

29. The system of Claim 28, wherein the second drive power source is a single speed non-reversible electric motor with its longitudinal drive axis aligned co-linear with the longitudinal main shaft axis of the main shaft of the reversible drive power source.

30. A method for providing power to two subsystems, comprising:

providing a reversible drive power source capable of outputting rotational power;

outputting rotational power from the reversible drive power source through a main power shaft, operating at a rotational speed;

engaging the main power shaft with and driving a first subsystem when the main power shaft rotates in a first direction, and disengaging from the first subsystem when the main power shaft rotates in an opposite direction;

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engaging the main power shaft with and driving a second subsystem when the main power shaft rotates in the opposite direction; and disengaging the second subsystem when the main power shaft rotates in the first direction.

31. The method of Claim 30, further comprising:

driving the reversible power source at one of two speeds, multiple speeds, and variable speeds.

32. The method of Claim 30, further comprising:

engaging the main power shaft with the first subsystem utilizing gearing that increases the rotational speed of the main power shaft driving the first subsystem.

33. The method of Claim 30, further comprising:

engaging the main power shaft with the first subsystem utilizing gearing that decreases the rotational speed of the main power shaft driving the first subsystem.

34. The method of Claim 30, further comprising:

providing additional power to the second subsystem by driving it with a second drive power source connected to and driving the second subsystem.